

REMARKS

Claims 1-14 and 16-21 remain in the application. Independent claims 1, 9, 14 and 17 have been amended to include the limitation of the stiffener being disposed on a center portion of the movable plate. The support for these amendments can be found in the Detailed Description sections of the current application at page 6, lines 13-14. Claim 15 has been cancelled. No new subject matter has been added with these amendments. Thus, claims 1-14 and 16-21 remain pending.

A. 35 U.S.C. § 102(b)

Mann - Claims 14-16

Claims 14-16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,198,670 issued April 15, 1980 to Gamdur S. Mann, (hereinafter "the Mann patent") (Office Action, pages 2). Claim 15 has been cancelled without prejudice. For at least the reasons set forth below, Applicants submit that claims 14 and 16 are not anticipated by the Mann patent.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 14 has been amended to add the limitation of the stiffener being disposed upon a center portion of the movable charge plate. The Official Action at page 2 states that the Mann patent teaches a "stiffener 10 affixed to the movable charge plate 12." However,

the stiffener 10 (support member) disclosed in Mann is only used to provide support at the periphery of the moveable charge plate 12 (col. 2, lines 29-30, and FIG. 1), and is not present in the center portion of the movable plate, as disclosed in amended claim 14. Therefore, since the Mann patent does not teach or disclose a stiffener in the center portion of the movable plate, claim 14 is not anticipated by the Mann patent.

In addition, since dependent claims include all of the limitations of the independent claims from which they depend, claim 16, which depends from claim 14, is not anticipated by the Mann patent. Therefore, reconsideration and withdrawal of the Section 102(b) rejection of claims 14 (claim 15 having been cancelled) and 16 are respectfully requested.

B. 35 U.S.C. § 103(a)

Mann in view of Takaishi - Claims 1-13 and 17-21

Claims 1-13 and 17-21 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Mann patent in combination with the U.S. patent No. 5,973,343 issued October 26, 1999 to Yoshihiro Takaishi (hereinafter "the Takaishi patent") (Office Action, pages 2).

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Regarding claims 1, 9 and 17, the Office contends that "it would have been obvious to use the capacitor of Mann in a semiconductor device" (Office Action at page 3).

The Office Action relies on the Mann reference for a teaching of a "stiffener disposed upon the movable charge plate." However, the stiffener disclosed in the Mann patent is only used to provide support at the periphery of the moveable charge plate 12 (col. 2, lines 29-30, and FIG. 1), and is not present in the center portion of the movable charge plate. Therefore, the Mann patent does not teach or suggest all of the limitations of claims 1, 9 and 17.

Takaishi discloses a capacitor used in a semiconductor device, in which the capacitor CP is a non-variable storage capacitor (col. 6, line 6). The Takaishi patent does not disclose a variable capacitor with a stiffener disposed on the center portion of the movable charge plate. Therefore, the Takaishi patent does not teach or suggest all of the claim limitations of claims 1 and 9.

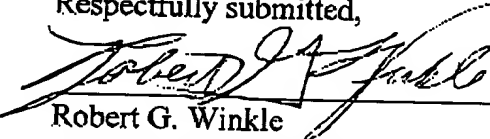
Amended claims 1, 9 and 17 of the present invention disclose a stiffener in the center portion of the movable charge plate (FIG.1 of the present invention), which serves the purpose of causing the planar (central) portion of the movable charge plate 16 to resist bending (Detailed Description of the present application, page 6, lines 20-21), thereby making the variable capacitance a more linear function of the force applied, and thus increasing the tuning range of the capacitor (Detailed Description, page 6, lines 3-4). Neither Mann nor Takaishi disclose a stiffener in the center portion of the movable charge plate that enhances the linearity of the variable capacitor. Because the Mann patent either alone or in combination with the Takaishi patent does not teach or suggest all of the claim limitations of the present invention, claims 1, 9 and 17 are not rendered obvious over the Mann patent in view of the Takaishi patent.

"If an independent claim is nonobvious, then any claim depending from the independent claim is also nonobvious." *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1998). Because dependent claims 2-8, 10-13 and 18-21 depend from claims 1, 9, and 17 respectively, Applicants submit that claims 2-8, 10-13 and 18-21 are not rendered obvious by the Mann patent in view of Takaishi. Therefore, reconsideration and withdrawal of the Section 103(a) rejection of claims 1-13 and 17-21 are respectfully requested.

In view of the foregoing remarks, the Applicants request allowance of the application. Please forward further communications to the address of record. If the Examiner needs to contact the below-signed attorney to further the prosecution of the application, the contact number is (503) 712-1682.

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Respectfully submitted,


Robert G. Winkle
Attorney for Applicants
Reg. No. 37,474

VERSION OF CLAIMS WITH MARKINGS

IN THE CLAIMS:

1. A capacitor, comprising:
 - a fixed charge plate disposed in a semiconductor substrate;
 - a moveable charge plate disposed above the fixed charge plate; and
 - a stiffener disposed on a center portion of [affixed to] the movable charge plate.

9. A variable capacitor in a semiconductor device comprising:
 - a movable charge plate disposed in a semiconductor substrate;
 - means for suspending the movable charge plate;
 - means for moving the movable charge plate;
 - a stiffener disposed on a center portion of [upon] the movable charge plate.

14. A capacitor comprising:
 - a first fixed charge plate disposed in a semiconductor substrate;
 - a flexible dielectric disposed above the first fixed charge plate;
 - a second charge plate disposed upon the flexible dielectric, wherein the flexible dielectric is interposed between the first fixed charge plate and the second charge plate; and
 - a stiffener disposed upon a center portion of the second charge plate.

17. A microelectromechanical structure variable capacitor comprising:
- a fixed charge plate disposed upon an elevated semiconductor substrate;
 - a fixed actuator plate disposed upon a lower semiconductor substrate,
 - wherein the fixed actuator plate is below the fixed charge plate;
 - a moveable charge plate suspended above the fixed charge plate; and
 - a stiffener disposed upon a center portion of the movable charge plate.